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MEDGIZ, MOSCOW - 1960

THE EFFECTIVENESS OF ANTIBIOTIC THERAPY AND THE PREVENTION OF EXPERIMENTAL ANTHRAX INFECTION DEVELOPING ON THE BACKGROUND OF ACUTE RADIATION SICKNESS.

A.P. Krasil'nikov and N.A. Izrael' (Minsk).

We studied the effectiveness of antibiotic therapy and a specific serum during experimental anthrax infection of white mice (caused by the second Tsenkovski vaccine) developing on the background of acute radiation sickness (radiation in a dose of 500 infection on the third day after radiation). The effectiveness of the serum and the antibiotics was judged by comparing the effectiveness indexes, i.e., L.D._{50/5} of treated with L.D._{50/5} of non-treated animals of a control group (subjected or not subjected to radiation). For therapeutic purposes, we injected biomycin and terramycin into the intestinal tract in a dose of 0.2 mg; penicillin and streptomycin - intramuscularly at 100 (ED) units per mouse, three times (following 12, 24 and 36 hours after infection); serum - in a dose of 0.5 ml - 20 hours; penicillin and streptomycin at 100 units; biomycin - at 0.4 mg. per mouse, one hour prior to infection. In all, we effected ten experiments (120 mice).

A decrease in therapeutic activity of radiation sickness was evidenced by using all tested preparations, but not to the same extent. The effect of applying the ordinary doses of serum, penicilling, terramycin, levo-mycetin was lost completely; in using serum with penicilling, the index of effectiveness decreased in comparison with the one of an analagous group of non-radiated mice - 10,000 times (from 10.000 to 1); streptomycin - 18,000 times (from 330.000 to 18); serum, penicillin and streptomycin - 60,000 times (from 300 mln to 550); biomycin with streptomycin - 90 times (from 59 mln to 640,000); biomycin - only 160 times (from 16 mln to 100.000); biomycin with streptomycin and serum - only 7 times (from 143 mln to 21 mln). The high degree of effectiveness caused by the application of biomycin and its comparison with streptomycin and serum-relatively the slight decrease in a radiated organism, as well as a rapid cleansing of the organism from anthrax bacteria - indicated the high therapeutic value of these elements when used for anthrax infection, developing on the background of an acute radiation sickness.

The effectiveness of antibiotic therapy, used on animals subjected to radiation, decreased in a greater degree during the beginning of the therapy than during the later periods following infection. The non-radiated mice, which were administered biomycin, in conjunction with streptomycin and serum - 24 hours following infection. LD_{50/5} decreased by 247 times (in comparison with the 12-hour group); and with the radiated - 3600 times; at the start of the therapy, after 36 hours following infection with the non-radiated animals, the LD_{50/5} decreased - 14.000 times; and with the radiated - 2.2 mln times. The same basic principles, but to a less pronounced degree were observed when testing the prophylactic action of serum and antibiotics (7 experiments at 120 mice). Also in this instance, biomycin in conjunction with streptomycin proved the most effective.

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Lila Bard
5411 Hawthorne Pl. NW
Washington 16, D.C.